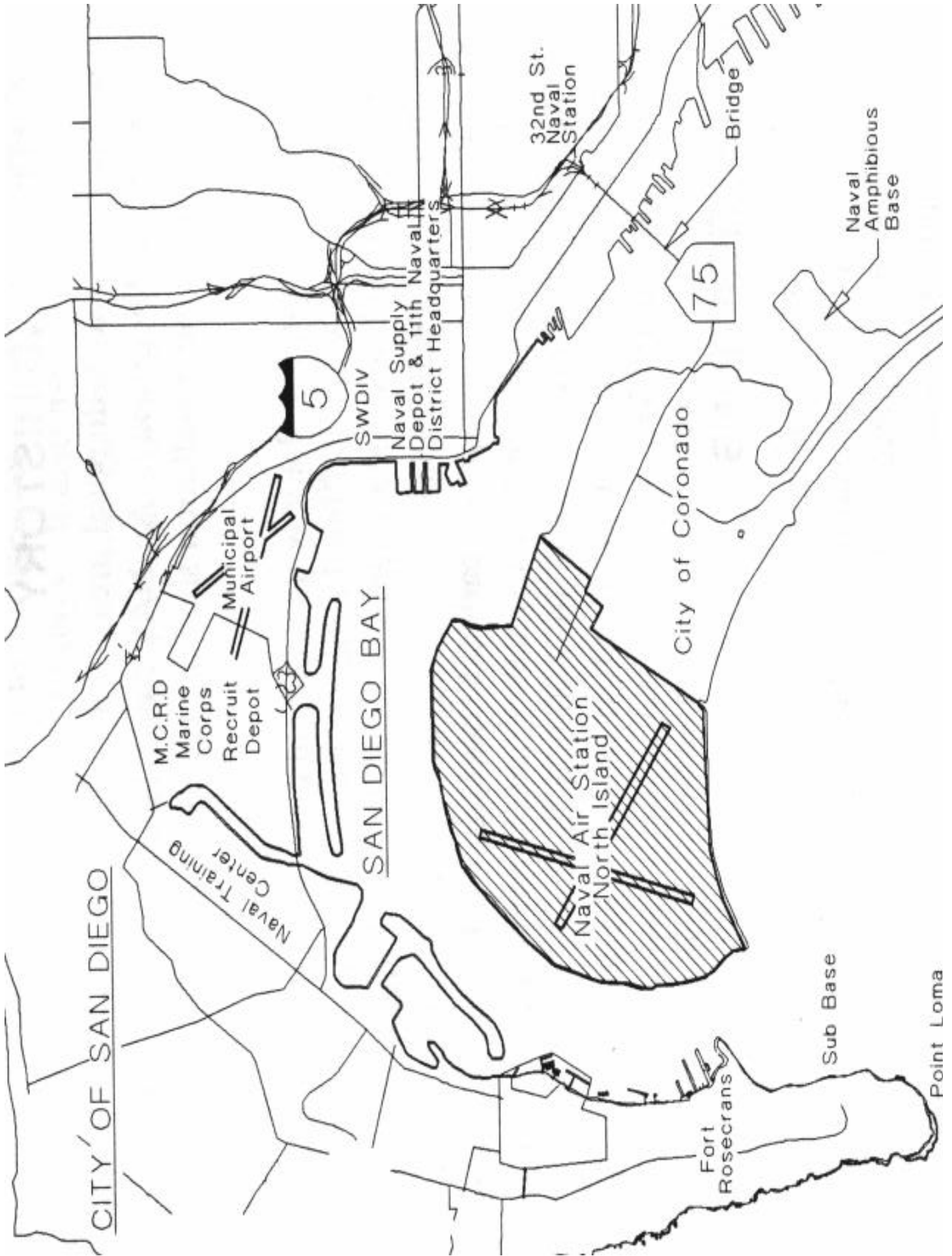


**Workshop on  
San Diego Bay Contaminated  
Marine Sediments Assessment  
and Remediation  
Agenda No. 7 - DoD Sites**

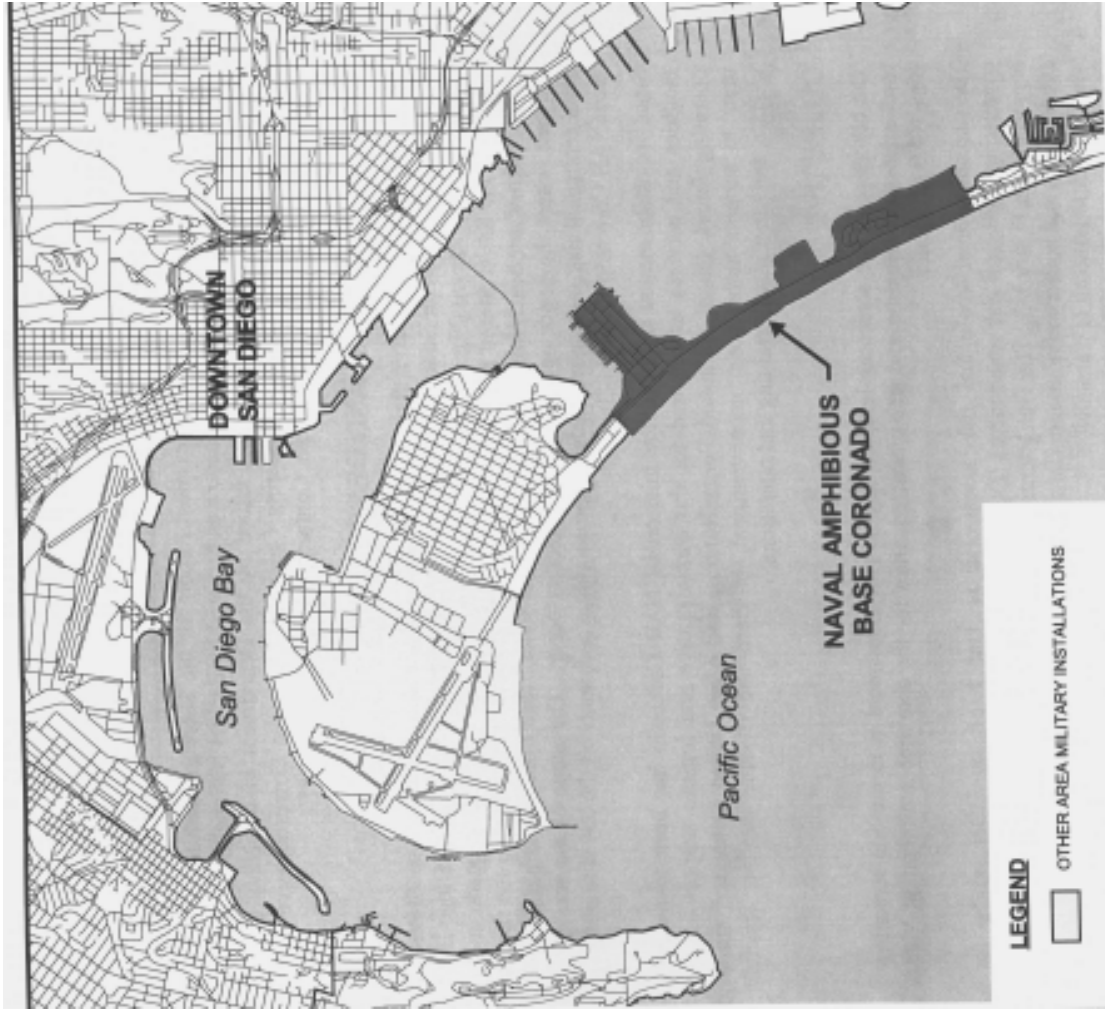
**Charles Cheng, Ph.D. AEG  
Site Mitigation & Cleanup Unit  
(858) 627- 3930  
chenc@rb9.swrcb.ca.gov**

# Selected DoD Sites

- Naval Amphibious Base (NAB)  
Coronado - DTSC Lead
- Naval Air Station North Island  
(NASNI) - DTSC & RWQCB Joint  
Lead
- Former Naval Training Center  
(NTC) - RWQCB Lead



**Sediment Contamination at  
Sites 3 and 2/4  
Naval Amphibious Base  
(NAB)  
Coronado**



**LEGEND**

□ OTHER AREA MILITARY INSTALLATIONS

N

6000 0 6000 Feet

Screening-Level Ecological Risk Assessment

**Figure 1-1**  
Vicinity Map

Naval Amphibious Base, Coronado, California

Date : 11/13/01  
File No. 16SR09506  
Job No. 22214-162  
Rev No. C

**Bechtel National Inc.**  
CLEAN II Program

# Site History

- Maintenance & repair of boats, trucks, amphibious landing vehicles and construction equipment
- Sources of waste include processing waste waters, petroleum products, paint & thinner, solvents, sandblast grit

# Site Contamination

- Liquid waste historical discharged to Glorietta Bay and San Diego Bay
- Site 1 - Waste oil/fuel disposal pits
- Site 2 - Solid waste disposal area, rusty drums reported offshore of Site 2
- Site 3 - Painting shop
- Site 4 - Sandblast grit disposal area, potential airborne transportation

# Offshore Contamination

- Sources of sediment contamination
  - historical discharges
  - waste disposal areas (Sites 2/4 and 3)
  - stormwater
- Sediment sampling



# Sediment Contamination

- The following contaminants were detected at concentrations above the sample quantitation limits (SQLs):
  - Metals
  - Pesticides/PCBs
  - VOCs

# Regulatory Oversight Structure

- DTSC is the lead agency
- RWQCB, FG, USFWS, NOAA are supporting agencies

# Strategy

- Use tiered approach to conduct ecological risk assessment
- DON policy is consistent with USEPA Guidance and DTSC guidance document
- Tier 1 - Screening Risk Assessment
- Tier 2 - Baseline Ecological Risk Assessment
- Tier 3 - Evaluation of Remedial Alternatives

# Investigation Results

- Tier 1 Screening Risk Assessment concludes that risk calculations for all the ecological receptors result in HQ >1, suggesting potential ecological risk
- Tier 2 Baseline Ecological Risk Assessment using additional site specific information is warranted

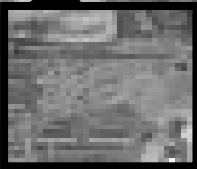
# Issues

- Water Quality Objectives
  - Numerical standards
  - Board policies

**Off-Shore Porewater  
Contamination & Investigation  
at Site 9  
Naval Air Station, North Island  
(NASNI)**



Site 9



# Site History

- Former Chemical Waste Disposal Area
- Non segregated dumping from 1940's to 1968 in marshy area ("Firey marsh")
- Dumping into unlined pits from 1968 until mid-1970's



## Site History (cont.)

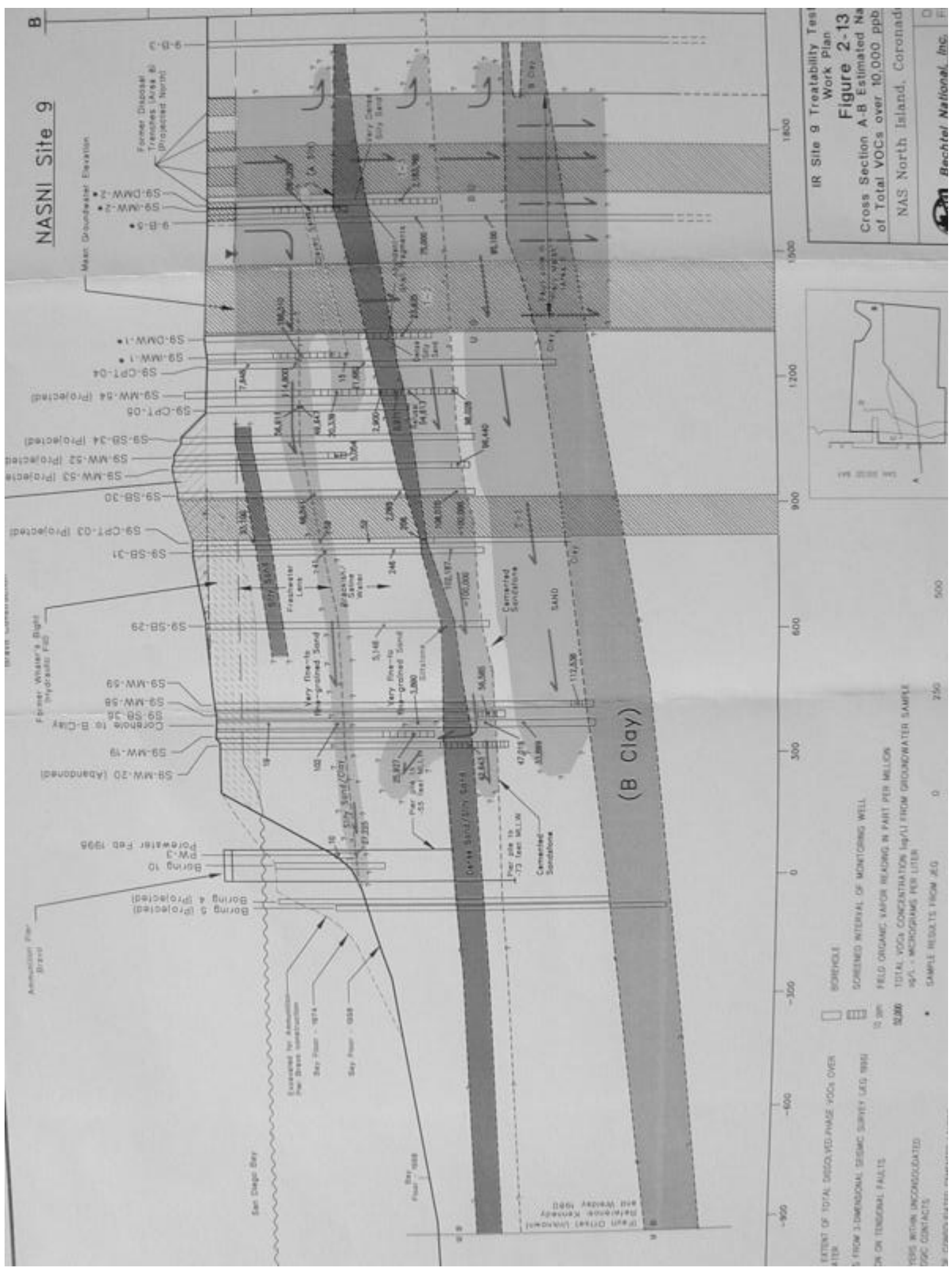
- Estimated 32 million gallons of liquid hazardous waste disposed
- Waste types include acids, caustics, solvents, cleaning/coating/plating solutions, metals, oil & hydraulic fluids

# Investigation Results

- GW is contaminated by all types of industrial wastes in the source area
- DNAPL exists and migrates
- Chlorinated VOCs and metals reported in porewater

# NASNI Site 9

B



IR Site 9 Treatability Test Work Plan  
**Figure 2-13**  
 Cross Section A-B Estimated Na of Total VOCs over 10,000 ppb  
 NAS North Island, Coronad



ENTENT OF TOTAL DISSOLVED PHASE VOCs OVER 10,000  
 FROM 2-DIMENSIONAL SEISMIC SURVEY LEG 1994  
 OR ON TENSILE FAULTS  
 VES WITH UNCONSOLIDATED ZONE CONTACTS  
 BOREHOLE  
 SCREENED INTERVAL OF MONITORING WELL  
 0.2% FIELD ORGANIC VAPOR READING IN PART PER WELL  
 TOTAL VOCs CONCENTRATION 10/11 FROM GROUNDWATER SAMPLE  
 10/11 - MICROGRAMS PER LITER  
 SAMPLE RESULTS FROM 10/11



# Off-Shore Investigations

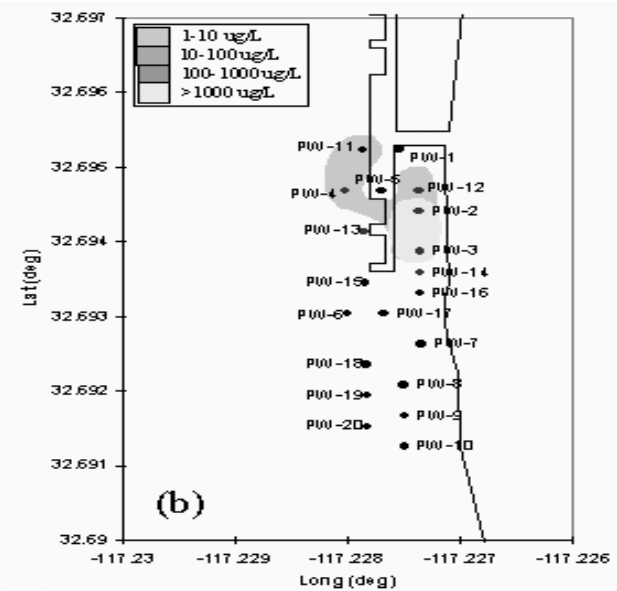
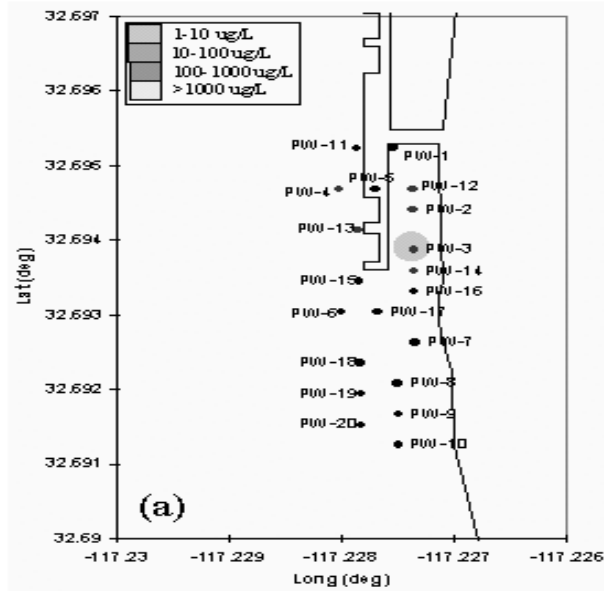
- Shoreline Cluster Wells for GW Monitoring
- Benthic Flux Measurement
- Sediment Porewater Sampling
- Limited Sediment Sampling

# Porewater Sampling Data

Chemicals	Max Concentration	WQOs
<b>VOCs</b>		
1,1,2-TCA	30	
1,1-DCA	140	
1,1-DCE	9000	
1,2-DCA	<b>200</b>	130
cis-1,2-DCE	42000	
ethylbenzene	53	
toluene	130	
trans-1,2-DCE	510	
<b>TCE</b>	<b>180</b>	27
<b>VC</b>	<b>12000</b>	36
<b>Metals</b>		
<b>Arsenic</b>	<b>57.5</b>	36
<b>Copper</b>	<b>7.4</b>	3.1
<b>Lead</b>	<b>9</b>	8.1
units in ug/L (ppb)		

Initial data:  
porewater  
concentrations

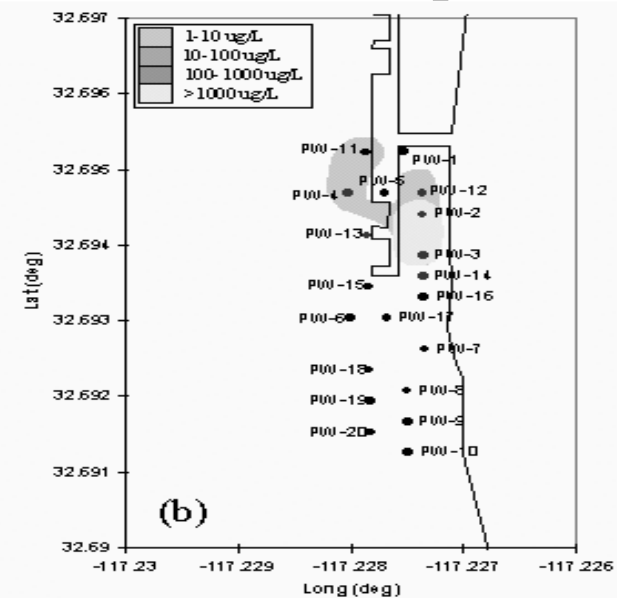
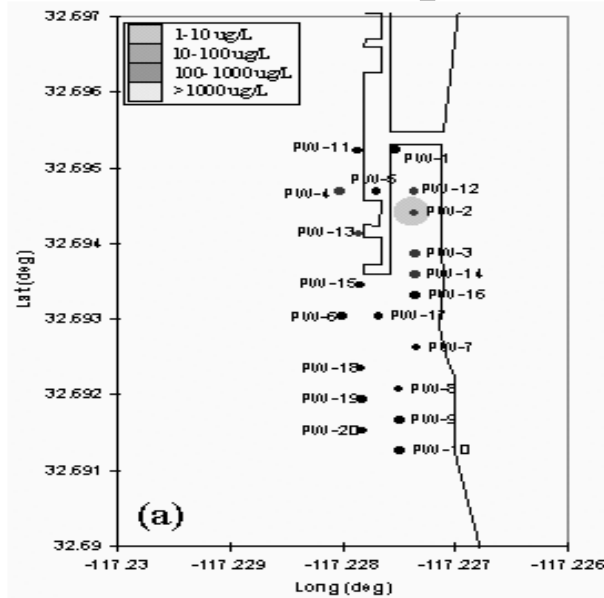
1,2 DCE



1 foot depth

5 foot depth

Vinyl chloride



# Current Investigation Status

- In-Situ Ecological Risk Assessment
- Feasibility Study



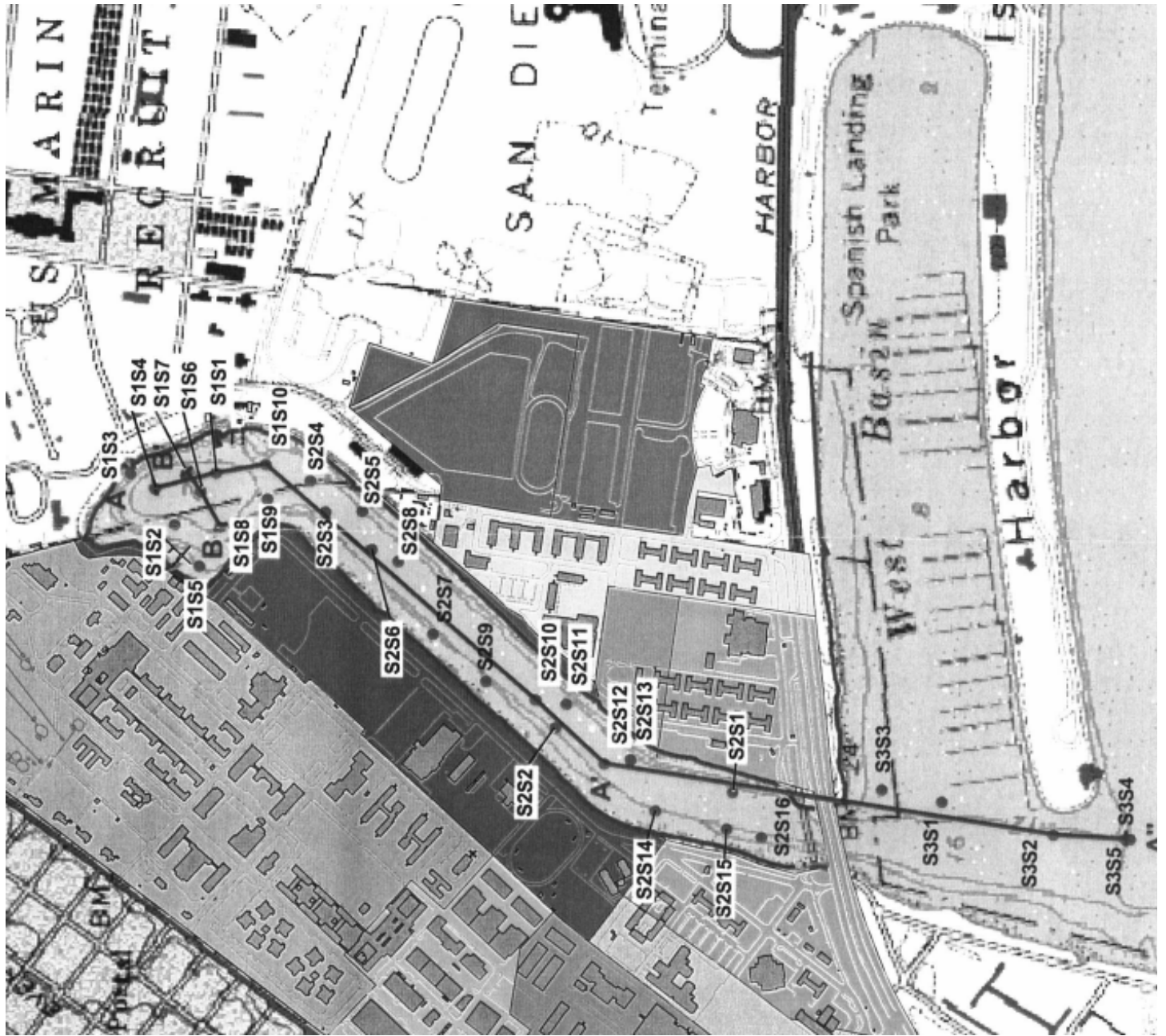
# Issues

- Porewater vs. Sediment Contamination
- Risk vs. Discharge
- Cleanup Feasibility and Strategy

**Sediment Contamination at  
Boat Channel (BC)  
Former Naval Training Center  
(NTC)**

# Background

- Commissioned in 1923 to provide training for US Navy
- NTC was recommended for closure and transfer of property under Base Realignment and Closure (BRAC)
- Boat Channel (Site 12) is the last parcel to be transferred



# Potential Waste Inputs from NTC Activities

- Waste lube oil
- Waste pesticides
- Plating wastewater
- Paint thinner/solvents
- Photoprocessing wastewater
- Storm drainage, surface water runoff, Illicit storm drain connections

# Potential Waste Inputs from Other Entities

- Thirty-three known storm water drains from NTC, MCRD, Airport (Port Authority), City
  - metals, pesticides, TPH, PCBs, phosphorus, surfactants, bacteria
- MCRD
  - sewage, steam cleaning effluent, pesticides, PCBs, pentachlorophenol, medical lab wastes, photoprocessing wastewater
- Fleet Anti-Submarine Warfare Training Cntr
  - boat shop degreasing wastewater

# Remedial Investigation (RI)

- Sediment evaluation (triad approach)
- Aquatic-dependent wildlife risk assessment
- Human health risk assessment

# Remedial Investigation (RI) Results

- Sediments
  - elevated chemical concentrations (highest known lead conc. in the San Diego Bay)
  - reduced survival rate in test animals
  - reduced abundance & diversity of resident benthic invertebrate community
- No risk to wildlife and human health



# Selected Sediment Data

Chemicals	Max Concentration	ERL
Arsenic	20	8.2
Chromium	145	81
Copper	<b>281</b>	34
Lead	<b>391</b>	46.7
Mercury	0.7	0.15
Silver	2.34	1
Zinc	<b>530</b>	150
Chlordane	<b>26</b>	0.5
Total PCBs	92.8	22.7
Total DDT	<b>274</b>	1.58
Total PAHs	5436	4022
Dibutyltin	221	
Tributyltin	195	

# Conclusions from RI Report

- No impact to wildlife and human, sediment “hotspot” is outside NTC’s property, it is not NTC’s problem
- NTC unlikely contributed to sediment contamination in the boat channel
- Boat Channel should be “clean closed” for transfer

# Technical Concerns with the RI Report

- Reference stations
  - location close to BC, fuel dock, vessels
  - higher PCB accumulation in clam tissue
  - different grain size
- Fewer toxicity tests
  - echinoderm development data excluded because reference station data failed

# Technical Concerns with the RI Report (cont.)

- Decision matrix
  - Only **ALL** 3 categories register hits would it be considered AOEC
  - High threshold for sediment chemistry
    - > 1.2 RTR
    - > 4xERM (individual) or
    - > 0.85 ERMQ (total)

# Sediment Quality Decision Matrix

<b>Sediment Chemistry</b>	<b>Toxicity</b>	<b>Benthic Community</b>	<b>Aquatic Life BU Impairment</b>
<b>+</b>	<b>+</b>	<b>+</b>	<b>Highly Likely</b>
<b>+</b>	<b>-</b>	<b>+</b>	<b>Likely</b>
<b>+</b>	<b>+</b>	<b>-</b>	<b>Likely</b>
<b>-</b>	<b>+</b>	<b>+</b>	<b>Possible</b>
<b>-</b>	<b>+</b>	<b>-</b>	<b>Possible</b>
<b>-</b>	<b>-</b>	<b>+</b>	<b>Unlikely</b>
<b>+</b>	<b>-</b>	<b>-</b>	<b>Unlikely</b>
<b>-</b>	<b>-</b>	<b>-</b>	<b>Highly Unlikely</b>

**(+) Contaminated or impacted**

**(-) Not contaminated or not impacted**

# RWQCB's Recommendations

- Re-interpret existing data
- Conduct storm drain system investigation
- Address the BC separate from the rest of NTC property
- All involved parties be named RPs to participate in further investigation and cleanup activities
- BC should not be considered for closure until cleaned

# Navy's Responses

- The workplan was formerly approved, will not re-evaluate data
- Navy no longer owns NTC, will not conduct storm drain investigation
- Navy's policy regarding cleanup
- Navy wants to transfer the property ASAP

# Issues and Challenges

- Is there a problem?
- Consistency
- Property transfer
- Continuous discharges from storm drain
- Multiple RPs